

## Generation validation

### The role of social comparison in use of Instagram among emerging adults

Stapleton, Peta; Luiz, Gabriella; Chatwin, Hannah

*Published in:*  
Cyberpsychology, Behavior, and Social Networking

*DOI:*  
[10.1089/cyber.2016.0444](https://doi.org/10.1089/cyber.2016.0444)

*Licence:*  
Other

[Link to output in Bond University research repository.](#)

#### *Recommended citation(APA):*

Stapleton, P., Luiz, G., & Chatwin, H. (2017). Generation validation: The role of social comparison in use of Instagram among emerging adults. *Cyberpsychology, Behavior, and Social Networking*, 20(3), 142-149.  
<https://doi.org/10.1089/cyber.2016.0444>

#### **General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

For more information, or if you believe that this document breaches copyright, please contact the Bond University research repository coordinator.

## Generation Validation: The Role of Social Comparison in Use of Instagram Among Emerging Adults

Peta Stapleton BA, PGDipPsy, PhD

Associate Professor, School of Psychology

Bond University, Gold Coast, Queensland, 4229, Australia

Mailing Address: School of Psychology Bond University, Gold Coast, Queensland, 4229, Australia

Gabriella Luiz BA

Research Assistant, School of Psychology

Bond University, Gold Coast, Queensland, 4229, Australia

Mailing Address: School of Psychology Bond University, Gold Coast, Queensland, 4229, Australia

Hannah Chatwin BA, MClinPsych

Senior Research Assistant, School of Psychology

Bond University, Gold Coast, Queensland, 4229, Australia

Mailing Address: School of Psychology Bond University, Gold Coast, Queensland, 4229, Australia

All work was performed within Bond University, Gold Coast, Queensland, 4229, Australia.

Running Head: Social Comparisons and Instagram

All correspondence and reprint requests is to go to Dr Peta Stapleton, Assistant Professor, School of Psychology, Bond University, Gold Coast, Queensland, 4229, Australia.

Telephone: +61 7 55952 515, Facsimile: +61 7 55952 540, pstaplet@bond.edu.au

Acknowledgements and Disclosures: None

## Generation Validation: The Role of Social Comparison in Use of Instagram Among Emerging Adults

Young adults of the 21<sup>st</sup> Century are growing up amongst a momentous sociocultural change catalysed by the international growth of the Internet, social media, and SNSs<sup>1</sup>. Instagram, an online mobile SNS that provides users with an immediate means to capture and share their experiences, is rapidly becoming one of the fastest growing social media platforms<sup>2</sup>. Of Instagram's 400 million users, 55% are between the ages of 18 to 29<sup>3</sup>. Research indicates that youths' SNS behaviour entails exploration and self-presentation, which is potentially associated with the pivotal task of identity development<sup>4</sup>.

Feedback from the social context within which the individual operates has a profound impact on identity consolidation<sup>5</sup>. Within the digital age, emerging adults have to navigate the task of identity formation utilizing SNSs. A 2011 study<sup>6</sup> found Facebook users are driven by a sense of belonging, a need for connection, and acceptance. While these psychosocial needs are imperative to identity development in emerging adulthood, some researchers have suggested that SNS use may threaten these developmental milestones, particularly the development of self-esteem<sup>7,8</sup>.

Self-esteem refers to an individual's positive or negative appraisal of the self; that is, the extent to which the individual views the self as worthwhile and competent<sup>9</sup>. While some research has highlighted the relative stability of self-esteem, there is evidence to suggest it is fluid and reactive to life events<sup>10</sup>. For emerging adults who face overwhelming instability as they navigate this transitional phase, global self-esteem (or overall sense of worth) is likely to evolve<sup>10</sup>.

### **Social Media and Self-Esteem**

Erikson<sup>5</sup> initially posed that establishing a cohesive identity and sense of self is a fundamental developmental task, and this involves exploring and questioning the parameters of various roles, values, and identities in diverse social contexts then subsequently amalgamating each into a cohesive ego identity. Feedback from the social context within which the individual operates has a profound impact on identity consolidation and Erikson<sup>5</sup> argued that learning to develop interpersonal relationships separate to the family unit during the transition from adolescents to adulthood is imperative to optimal psychological development. Within the digital age, emerging adults often navigate this developmental task utilizing SNSs, such as Instagram, that provide them with limitless access to their social networks. Any psychological vulnerability during this time may result in SNS affecting constructs such as self-esteem and wellbeing<sup>7</sup>.

Research has found participants that used Facebook to express their need for support, were more likely to receive social support on Facebook, which in turn predicted increased psychological wellbeing<sup>11</sup>. Paradoxically, studies have reported that SNSs have also promoted an unhealthy dependence on approval from others to authenticate an individual's identity claims and self-worth<sup>1</sup>. Prior research has demonstrated that high-intensity Facebook use is associated with increased depression, decreased psychological wellbeing, and poorer trait self-esteem<sup>7,12,13</sup>.

Findings from a 2012 study suggested that contingent self-worth is another factor that may explain individual differences in the effects of SNS use<sup>14</sup>. Other researchers in the field have argued that not all events, good or bad, affect individual self-esteem equally<sup>15</sup>; it depends on how connected the events are to their contingencies of self-worth. Research has found that external contingencies of self-worth, such as contingencies that rely on other people for self-validation, are strongly

linked with compromised psychological wellbeing<sup>16</sup>. The literature suggests two plausible relationships, including the relationship between intensity of SNS use and self-esteem, and the relationship between contingent self-worth and self-esteem.

### **Social Comparison**

Several qualitative studies with samples of adolescents and emerging adults demonstrated that social comparison frequently takes place on SNSs<sup>17,18</sup>. Vogel and colleagues<sup>13</sup> found that the more participants used Facebook, the more they engaged in social comparison on Facebook. Social comparison theory posits that individuals learn about the self by comparing themselves with other individuals<sup>19</sup>. Instagram allows its users to present themselves in a desired manner that represents their ideal self with emphasis on their desired traits<sup>20</sup>. There is evidence to suggest that individuals consider other users to have happier, more successful lives than themselves<sup>21</sup>, which may in turn create opportunity for upward social comparison and adverse effects on their self esteem<sup>11,22</sup>. Vogel and colleagues<sup>13</sup> found that upward social comparison significantly mediated the relationship between SNS use and self-esteem, but the mediation pathway through downward social comparison was non-significant, thus indicating that participants who used Facebook frequently had poorer trait self-esteem, and that this was mediated by greater exposure to upward social comparison.

Other research studies have found that participants who were exposed to physically attractive profiles reported less positive emotions than participants who were exposed to unattractive Facebook profiles<sup>23</sup>. The authors argued that the effects of social comparison were dependent on the participants' self-esteem. While Vogel and colleagues<sup>13</sup> proposed social comparison mediates the relationship between SNS

use and self-esteem, other studies have suggested an alternative relationship driven by contingent self-worth<sup>24</sup>.

Research has indicated that contingent self-worth enhances motivation to engage in social comparison<sup>24</sup>. Instagram provides an accessible platform through which emerging adults with self-worth contingent on approval from others can exercise their self-validation goals<sup>15</sup>. Evidence has highlighted that self-worth staked in the domain of approval from others promotes behaviours such as social comparison, as well as internalization of societal ideals that subscribe to monitoring and valuing physical attractiveness<sup>15</sup>.

### **Current Research**

The current study focussed on the effects of Instagram use on self-esteem among emerging adults. This study aimed to test the merits of previous research proposing mediation models in relation to social media use, social comparison, and self-esteem or self-worth<sup>13,15,24</sup>. Based on this prior research, it was anticipated that:

- There would be a significant relationship between intensity of Instagram use and self-esteem, and that this would be mediated by social comparison on Instagram, and
- There would be a significant relationship between contingent self-worth and self-esteem, and that this would be mediated by social comparison on Instagram.
- The relationship between intensity of Instagram use and social comparison on Instagram would be significantly moderated by self-worth contingent on approval from others. That is, the more the individual's self-worth is contingent on approval from others the stronger the relationship between intensity of Instagram use and Social comparison on Instagram.

## Method

### Participants

The participants were recruited as part of a larger study via social media platform, Facebook. Participants were invited to forward the survey hyperlink to others in their social networks if they wished. This invitation continued to be forwarded by both the researcher and the recipients *ad infinitum*; this sampling method is referred to as chain sampling. Any information regarding Facebook use was not analysed for this study. The final sample comprised of 237 participants ( $n=237$ ) aged 18 to 25 ( $M=23.12$   $SD=2.17$ ). Prior to this, 328 participants were excluded because they did not meet inclusion criteria (which included being between 18-29 years), did not have Instagram, or failed to complete the survey. On average, participants had been using Instagram between six months and three years, with most participants joining Instagram at age 21. The range of hours per day spent on Instagram was between 30 minutes and five hours ( $M=2.88$   $SD=1.23$ ). See Table 1 for descriptive statistics in relation to demographic information.

### Materials

The materials used consisted of a web-based omnibus survey package, which included demographic questions (related to age, gender, ethnicity, country of residence, highest level of education attained, marital status, and age when first joined Instagram) and four self-report scales.

**Social Comparison.** The 11-item Iowa-Netherlands Comparison Orientation Measure (INCOM)<sup>19</sup> was used to measure individual differences in social comparison habits. Among the 11 items, nine are positively keyed (“I often compare how I am doing socially (e.g. social skills, popularity) with other people on Instagram”) and two

are negatively keyed (“I am not the type of person who compares often with others on Instagram”). The negatively keyed items were reverse scored, where a lower mean score indicated a lower level of social comparison. The scale was also adjusted by adding the term *Instagram* to items. For example, the original item “I often compare myself with others with respect to what I have accomplished in life” was adjusted by inserting the term *Instagram*. The adjusted item reads “I often compare myself with others on *Instagram* with respect to what I have accomplished in life”. No other changes were made the original scale.

The psychometric properties of the original scale have been demonstrated previously, including high internal consistency (.83), good discriminant validity, and adequate criterion-related validity<sup>19</sup>. The adjusted scale was observed to have adequate internal consistency in the current study ( $\alpha = .86$ ).

**Instagram Use.** There are currently no standardised measures available to assess Instagram use, thus the Facebook Intensity Scale<sup>25</sup> was adapted in the current study by replacing the term *Facebook* with *Instagram* (two comparable SNSs) and *Facebook friends* with *Instagram followers*; for example, instead of the statement “I feel I am part of the Facebook community” the statement was amended to “I feel I am part of the *Instagram* community”. No other changes were made the original scale. The Facebook Intensity Scale was developed for a study investigating university students’ SNS usage, social capital and the resources gained from being part of the SNS. The scale is designed to measure Facebook use beyond simple measures of frequency and duration, integrating emotional connectedness (e.g., “I would be sorry if Facebook shut down”) and its assimilation into the individual’s day-to-day life (e.g., “Facebook is part of my everyday activity”). Participants were required to respond to two self-report items measuring the extent to which participants actively



engage in Facebook activities, and indicate their level of agreement on these series of close-ended statements. The internal consistency of the original scale is good at .83, with convergent validity also well supported<sup>25</sup>. The adjusted scale was observed to have adequate internal consistency in the current study ( $\alpha = .89$ ).

**Self Esteem.** The 10-item Rosenberg Self-Esteem Scale (RSES)<sup>9</sup> was used to measure individuals' global evaluation of the self. Scale items include "I feel that I am a person of worth, at least on an equal plane to others" and "All in all, I am inclined to feel that I am a failure". The measure consists of 10 statements whereby respondents are asked to indicate their level of agreement on a 4-point likert scale anchored by *strongly disagree* and *strongly agree*. The scale items are all positively keyed, where a higher mean score indicated a higher level of self-esteem. Studies have confirmed the internal consistency (.91)<sup>26</sup>, test-retest reliability (.82)<sup>27</sup>, and convergent/divergent validity of the scale. The scale was observed to have adequate internal consistency in the current study ( $\alpha = .89$ ).

**Self-Worth.** The 35-item Contingencies of Self Worth Scale (CSWS)<sup>16</sup> was employed to measure the approval from others domain of self-esteem. The measure consists of 35 items whereby respondents are asked to indicate their level of agreement on a 5-point likert scale anchored by *strongly disagree* and *strongly agree*. Among the 35 items, 28 are positively keyed ("When I think I look attractive, I feel good about myself") and seven are negatively keyed ("My self-esteem is unrelated to how I feel about the way my body looks"). The negatively keyed items were reverse scored and the total score for each subscale was divided by five. The internal consistency across subscales is high (.82 to .96), adequate test retest reliability over a five-month period<sup>15</sup>, and strong construct validity<sup>16</sup>. The scale was observed to have adequate internal consistency in the current study ( $\alpha = .81$ ).

## Design

The present study utilised a non-experimental survey sample design. Predictor variables were intensity of Instagram use, contingent self-worth in the domain of approval from others, and social comparison on Instagram. The criterion variable was self-esteem.

## Procedure

The current study was approved by the relevant ethics committee. Participants recruited via Facebook who met the criteria of having an Instagram account received a hyperlink to the online survey by instant message. The participants were presented with an informed consent page, demographic questions, and the self-report scales described.

## Results

Power analysis, using G\*Power 3.1, confirmed that the current sample was adequate. Prior to conducting main analyses, all variables were inter-correlated, and the means and standard deviations were investigated (see Table 2).

**Mediation Model One.** A mediation analysis was performed<sup>28</sup> to test the first hypothesis that social comparison on Instagram mediates the association intensity of Instagram use and self-esteem (see Table 3). Baron and Kenny<sup>28</sup> proposed that in order to demonstrate mediation four steps are required. Step one stipulates there must be a significant relationship between the predictor and the criterion, that is, there must be a significant relationship between intensity of Instagram use and self-esteem. Step two stipulates there must be a significant relationship between the predictor and the mediator, that is, there must be a significant relationship between intensity of Instagram use and social comparison on Instagram. Step three stipulates there must be a significant relationship between the mediator and the criterion once the predictor is

controlled for, that is, there must be a significant relationship between social comparison on Instagram and self-esteem after variance in the criterion attributed to the predictor is partialled out. Lastly, step four stipulates to establish that the mediator completely mediates the relationship between the predictor and the criterion, once the mediator is controlled for, the relationship between the predictor and the criterion should be zero. More specifically, in order to demonstrate complete mediation, when social comparison on Instagram is controlled for, there should be no relationship association between Instagram intensity and self-esteem. The above steps<sup>28</sup> were tested using a Hierarchical Multiple Regression, with the predictor, intensity of Instagram use entered in block one and the mediator, social comparison on Instagram, entered in block two.

Results of the hierarchical regression can be seen in Table 2. Step one of the hierarchical regression revealed no significant association between the predictor and the criterion, intensity of Instagram use did not significantly predict self-esteem,  $F(1, 235) = .34, p = .56$ . It is worth noting however, that there was a significant association between the predictor and mediator,  $r = -.35, p < .001$ , and at step 2, social comparison on Instagram significantly predicted self-esteem,  $F(2, 234) = 19.54, p < .001$ . Despite intensity of Instagram use significantly predicting social comparison on Instagram, and, social comparison on Instagram predicting self-esteem, the hypothesized mediated model was not supported because intensity of Instagram use was not associated with Self-Esteem, as required by Baron and Kenny<sup>28</sup> first condition. It is interesting to note, that at step 2 of the Hierarchical Multiple Regression a significant unique association was found between the intensity of Instagram use and self-esteem,  $\beta = .15, p = .022$ , which may indicate a suppressor effect in that intensity of Instagram use only predicts self-esteem when social comparison on Instagram is held constant<sup>32</sup>.

**Mediation Model Two.** A mediation analysis was performed through a Hierarchical Multiple Regression to test the second hypothesis that social comparison on Instagram mediates the association between the predictor, contingent self-worth in the domain of approval from others, and the criterion, Self-Esteem. At step 1, contingent self-worth in the domain of approval from others predicted self esteem,  $F(1,235) = 85.03, p < .001$ , thus satisfying condition one of Baron and Kenny's<sup>28</sup> four conditions of mediation. The second condition was demonstrated by the significant bivariate correlation between contingent self-worth in the domain of approval from others and social comparison on Instagram,  $r = .22, p < .001$ . At step 2 the combination of contingent self-worth in the domain of approval from others and social comparison on Instagram significantly predicted self-esteem,  $F(2,234) = 53.29, p < .001$ , with contingent self-worth in the domain of approval from others ( $\beta = -.45$ ) and social comparison on Instagram ( $\beta = -.22$ ) making a significant unique contribution to explained variance in self-esteem. The third condition was satisfied as demonstrated by the beta weight of social comparison on Instagram. Lastly, the fourth condition was also demonstrated in that the unique association between contingent self-worth in the domain of approval from others and social comparison on Instagram at step 2 is less than the association shown at step one of the regression ( $\beta = -.51$ ). Additionally, a Sobel test was conducted and showed that the indirect pathway was significant,  $z = -2.98, p = .002$  (see Figure 1).

**Moderation.** The above steps were tested using a Hierarchical Multiple Regression (HMR). Baron and Kenny<sup>28</sup> proposed the moderation model has three causal paths that lead into the outcome variable (self-esteem). These include, effect of intensity of Instagram use as a predictor (Path *a*), the effect of contingent self-worth within the domain of approval from others as a predictor (Path *b*), and the interaction

of these two predictors (Path *c*). Moderation has occurred if the interaction (Path *c*) is significant, thus indicating the moderator alters the strength of the relationship between the predictor and the criterion. However, when the moderator, predictor and interaction term are found to be significant (Paths *a* and *b*), then moderation has occurred with significant main effects<sup>28</sup>. Significant main effects are conceptually not directly applicable to assessing the moderator hypothesis. For the interaction term to be clearly interpretable, it is preferable that the moderator is uncorrelated with the predictor and the criterion variable, however if correlations do exist, both the predictor and the moderator should be centred. Consequently, the predictor (intensity of Instagram use) and the moderator (contingent self-worth within the domain of approval from others) were both centred to address any problematic multicollinearity from the creation of an interaction term. An interaction term was created by multiplying the centred predictor by the centred moderator<sup>28</sup>.

Therefore, centred intensity of Instagram use and approval from others were entered into step 1, followed by the addition of the interaction term in step 2. At step 1, intensity of Instagram use and approval from others accounted for a significant amount of variance in social comparison on Instagram scores,  $R^2 = .26$ ,  $F(2, 234) = 43.06$ ,  $p = .001$ . At step 2, the overall model was significant,  $R^2 = .27$ ,  $F(3, 233) = 30.97$ ,  $p = .001$ , explaining 27% of the variance in the criterion. The addition of the interaction term at step 2 only explained an additional 1.60% variance in the criterion. Nonetheless, in the final model, the interaction term,  $b = .94$ ,  $t(233) = 2.28$ ,  $p = .023$ , was significant, indicating that moderation has taken place (see Table 5).

A simple slopes analysis was conducted to further investigate the observed moderation. Simple slopes analysis was performed using PROCESS<sup>29</sup>. PROCESS computes a regression equation for the predictor and the criterion at low, high and

moderate levels of the moderator defined as one standard deviation below the mean, at the mean, and one standard deviation above the mean respectively (Field, 2013). The simple slopes analysis revealed the association between the independent variable and criterion was significant at all three levels of the moderator. When self-worth contingent on approval from others is low, there is a significant relationship between Instagram intensity and social comparison on Instagram,  $b = 2.64$ , 95% CI [1.36,3.92],  $t = 4.05$ ,  $p < .001$ . At a mean value of self-worth contingent on approval from others, there is a significant relationship between Instagram intensity and social comparison on Instagram,  $b = 3.81$ , 95% CI [2.83,4.78],  $t = 7.71$ ,  $p < .001$ . Lastly, when self-worth is highly contingent on approval from others, there was a significant relationship between Instagram intensity and social comparison on Instagram,  $b = 5.00$ , 95% CI [3.61,6.34],  $t = 7.14$ ,  $p < .001$ . This indicated the relationship between Instagram intensity and social comparison on Instagram changes, specifically becomes stronger, as individuals report higher levels of self-worth contingent on approval from others, thus supporting the hypothesised moderation.

## Discussion

In the current study, there was no significant mediation observed between Intensity of Instagram use and self-esteem, as there was no significant association between the predictor and criterion. This is largely inconsistent with previous research<sup>13,30</sup>. While this could suggest that unlike Facebook, Instagram use is not related to self-esteem at all, another explanation for this is perhaps issues relating to measurement of Instagram. The current study adapted the well-established Facebook Intensity Scale, but while Facebook and Instagram share many commonalities, there are a number of subtle differences (e.g., Facebook relationships being bidirectional while Instagram following is a unidirectional process) that may imply that the adapted

measure was less sensitive to capturing this construct. An alternative explanation for the above-mentioned results is that perhaps SNS use can have deleterious effects on self-esteem but only when the young person seeks external validation from their peers, thus pointing to the second hypothesised model.

Results of the present study indicated that self-worth contingent on approval from others and social comparison on Instagram, make a significant unique contribution to the explained variance in self-esteem scores among emerging adults, consistent with the literature<sup>21,23,24</sup>. This may indicate that social comparison on Instagram provides the young person whose self-worth is contingent on approval from others an opportunity to exercise their self-validation goals, and subsequently authenticate their self-worth. In the process of self-validating through social comparison, the young person is more likely to fall into the trap of correspondence bias, which in turn adversely affects their self-esteem. This term refers to the tendency to presume that others actions and words are representative of their personality as opposed to being affected by their immediate social context<sup>21</sup>. For example, when a young person views images or videos of other Instagram users which depict the user as happy, the young person may conclude that the individual is happy without considering the situations that made the user happy.

In the present study, results revealed a significant moderation effect, suggesting that young people who use Instagram more intensely engage in greater levels of social comparison when they have higher levels of self-worth that is contingent upon approval from others. These findings are consistent with previous studies in the area of SNSs and self-worth<sup>31</sup>. Although the interaction term effect was seemingly small, research has highlighted that even when reliable moderator effects

are observed, the decrease in model error as a result of adding the interaction term is disconcertingly low<sup>32</sup>.

### **Limitations of the Current Study**

Although some significant results were observed, variance in self-esteem explained by social comparison on Instagram and self-worth contingent on approval from others was small and there is a large quantity of variance unaccounted for<sup>32,33</sup>. While variances less than 50% are anticipated in human research<sup>33</sup>, results should be interpreted with caution. The current study used a convenience sampling method in order to recruit a larger sample size, which may also present subsequent threats to the studies external validity.

Finally, this study did not examine the number of followers on Instagram as well as feedback provided on Instagram by peers/followers and actual size of offline social network. This may also have influenced self-esteem. In line with this, other social media use (e.g. Facebook) was not examined alongside the outcomes, and future research should also include control groups (of persons not using Instagram, or not using SNS at all) to control for influence of offline social networks and face-to-face contacts.

### **Implications of the Current Study**

The current study has investigated Instagram, a new SNS that is relatively untouched by the psychological science research community, and shows that social comparison on SNSs can be detrimental to the self-esteem of emerging adults. Findings emphasize the practical implications of everyday SNS use among emerging adults. The younger people engage in SNS use, the more at risk they are of being exposed to social comparison information, which in turn could result in cumulative harmful effects on wellbeing. Since emerging adults with low self-esteem are more



likely to use SNSs to communicate their needs in what they perceive to be a safe environment<sup>11,34</sup>, this has the potential to result in a perpetuating cycle of using SNSs to be given social support while simultaneously exposing the young adult to social comparison information, thus, hindering self-esteem and continuing the cycle.

Overall, findings may imply that, while it may be increasingly adaptive for emerging adults to utilize various social communication tools to express their identities in the digital age, psychological wellbeing may be fostered by stronger offline relationships with friends and family that are not contingent on approval from others on SNSs.

### **Conclusion**

Overall, the current study tested the intrinsic worth of two proposed models suggested in the literature. Results suggested that social comparison on Instagram mediated the relationship between self-worth contingent on approval from others and self-esteem, and that self-worth contingent on approval from others plays a significant role in the relationship between Instagram use and social comparison on Instagram. The present study contributes to a better understanding on individual differences in the effects of the use of Instagram on self-esteem among emerging adults. Future studies may seek to consider the implications of social comparison on Instagram within clinical samples. Moreover, alternative approaches to exploring these variables would be useful, perhaps by adopting an experimental design whereby young adults are exposed to an Instagram profiles created by the researchers, which is manipulated to convey upward or downward comparative information. This information is pivotal in maximising the benefits of Instagram use, and, decreasing the threats posed by social media use, for the well-being of emerging adults.

### **Acknowledgements**

There were no commercial associations that might create a conflict of interest in connection with the submitted manuscript.

## References

1. Manago AM. (2014) Identity Development in the Digital Age: The Case of Social Networking Sites. In: McLean KC, Syed M, eds, The Oxford handbook of identity development. New York: Oxford University Press, pp. 508-518.
2. Mander J. Instagram tops the list of social network growth. Globalwebindex; 2014.
3. Instagram. Celebrating a community of 400 million; 2015.
4. Subrahmanyam K, Smahel D. (2011) Digital youth: The role of media in development. New York: Springer.
5. Erikson EH. (1968) Identity, youth, and crisis; 1st ed. New York: W. W. Norton.
6. Sheldon KM, Abad N. Hinsch C. A two-process view of Facebook use and relatedness need-satisfaction: Disconnection drives use, and connection rewards it. *Journal of Personality And Social Psychology* 2001; 100:766-75.
7. Konstam V. (2015) Emerging and young adulthood: multiple perspectives, diverse narratives. New York: Springer.
8. Manago AM, Vaughn, L. (2015) Social media, friendship and happiness in the millennial generation. In: Demir M, ed. Friendship and happiness: Across the lifespan and in different cultures. Amsterdam: Springer, pp. 187-206.
9. Rosenberg, M. (1965) Society and the adolescent self-image. Princeton: Princeton University.
10. Chung J, Robins R, Trzesniewski K, Nofle E, Roberts B, Widaman K, King LA. Continuity and change in self-esteem during emerging adulthood. *Journal of Personality and Social Psychology* 2014; 106:469-83.
11. Kim J, Lee JR. The Facebook paths to happiness: Effects of the number of Facebook friends and self-presentation on subjective well-being.

- Cyberpsychology, Behavior and Social Networking 2011; 14:359-64.
12. Tazghini S, Siedlecki KL. A mixed method approach to examining Facebook use and its relationship to self-esteem. *Computers in Human Behavior* 2013; 29:827-32.
  13. Vogel EA, Rose JP, Roberts LR, Eckles K. Social comparison, social media, and self-esteem. *Psychology of Popular Media Culture* 2014; 3: 206.
  14. Lee SK, Moore DC, Park E, Park SG. Who wants to be “friend rich”? Social compensatory friending on Facebook and the moderating role of public self-consciousness. *Computers in Human Behaviour* 2012; 28:1036-43.
  15. Crocker J & Wolfe CT. Contingencies of self-worth. *Psychological Review* 2001; 108:593-623.
  16. Crocker J, Luhtanen RK, Cooper ML, Bouvrette A. Contingencies of Self-Worth in College Students: Theory and Measurement. *Journal of Personality and Social Psychology* 2003; 85:894-908.
  17. Livingstone, S. Taking risky opportunities in youthful content creation: Teenagers’ use of social networking sites for intimacy, privacy, and self-expression. *News Media Society* 2008; 10:393-411.
  18. McAndrew FT, Jeong HS. Who does what on Facebook? Age, sex, and relationship status as predictors of Facebook use. *Computers in Human Behaviour* 2012; 28:2359-65.
  19. Gibbons FX, Buunk BP. Individual differences in social comparison: Development of a scale of social comparison orientation. *Journal of Personality and Social Psychology* 1999; 76:129.
  20. Rosenberg J, Egbert N. Online impression management: Personality traits and concerns for secondary goals as predictors of self-presentation tactics on

- Facebook. *Journal of Computer-Mediated Communication* 2011; 17:1-18.
21. Chou HTG, Edge N. "They are happier and having better lives than I am": The impact of using Facebook on perceptions of others' lives. *Cyberpsychology, Behavior, and Social Networking* 2012; 15:117-21.
22. Vitak J, Ellison NB. 'There's a network out there you might as well tap': Exploring the benefits of and barriers to exchanging information and support-based resources on Facebook. *New Media Society* 2012; 15:243-59.
23. Haferkamp N, Kramer N. Social comparison 2.0: Examining the effects of online profiles on social networking sites. *Cyberpsychology, Behaviour, and Social Networking* 2011; 14:309-14.
24. Patrick H, Neighbors C, Knee CR. Appearance-related social comparisons: The role of contingent self-esteem and self-perceptions of attractiveness. *Personality and Social Psychology Bulletin* 2004; 30:501-14.
25. Ellison N, Steinfield C, Lampe C. The benefits of Facebook "friends": Social capital and college students' use of online social networking sites. *Journal of Computer-Mediated Communication* 2007; 12:1143-68.
26. Sinclair SJ, Blais MA, Gansler DA, Sandberg E, Bistis K, LoCicero A. Psychometric properties of the Rosenberg Self-Esteem Scale: Overall and across demographic groups living within the United States. *Evaluation & the Health Professions* 2010; 33:56-80.
27. Fleming JS, Courtney BE. The dimensionality of self-esteem: II. Hierarchical facet model for revised measurement scales. *Journal of Personality and Social Psychology* 1984; 46:404.
28. Baron RM, Kenny DA. The moderator-mediator variable distinction in social

- psychological research: conceptual, strategic, and statistical considerations.  
Journal of Personality and Social Psychology 1986; 51:1173-82.
29. Hayes AF. (2012) PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling.
30. Stutzman F, Vitak J, Ellison NB, Gray R, Lampe C. Privacy in Interaction: Exploring Disclosure and Social Capital in Facebook 2012. In ICWSM.
31. Crocker J, Park LE. The costly pursuit of self-esteem. Psychological Bulletin 2004; 130:392-414.
32. McClelland GH, Judd CM. Statistical difficulties of detecting interactions and moderator effects. Psychological Bulletin 1993; 114:376.
32. Cohen J. (1988) Statistical Power of Analysis for the Behavioural Sciences (2<sup>nd</sup> ed). Hillsdale, New Jersey: Erlbaum.
33. Field A. (2013) Discovering Statistics Using IBM SPSS Statistics (4<sup>th</sup> ed). London, England: Sage.
34. Forest AL, Wood JV. When social networking is not working individuals with low self-esteem recognize but do not reap the benefits of self-disclosure on Facebook. Psychological Science 2012; 23:295-302.